



# **Heels and Pebbles Tank Retrieval Residues**

**Blaine Barton**



**CH2MHILL**

# C-106 Residual Waste

- C-106 was retrieved by Sluicing with recycled supernate followed by oxalic acid digest of residue.
- About 370 cubic feet of waste remain in the tank.
- Mud, sand and gravel like materials.

# Tank C-106 Residual Waste Constituents > 1 wt% in Solids

Constituent	Mass (kg)	percentage
Manganese	549.0	25.70%
Aluminum	382.0	17.88%
Oxalate	332.0	15.54%
Iron	207.0	9.69%
Sodium	188.0	8.80%
Calcium	118.0	5.52%
Phosphate	90.0	4.21%
Carbonate	75.8	3.55%
Nitrite	41.4	1.94%
Nitrate	34.8	1.63%
Nickel	30.2	1.41%
Lead	25.6	1.20%
Total	2073.8	97.1%

# C-106 Final



PAN-215  
TLT-120  
04FEB04  
12:39PM  
C-106



# Tank C-103 Residual Waste

- About 2,600 gal waste remaining in tank
- Loose, gravel-like and fine material
- Post-retrieval samples described as varying in size from coarse sand to  $\frac{1}{2}$  in. diameter particles, light brown and gray in color.

# Tank C-103 Residual Waste Constituents > 1 wt% in Solids

Constituent	Concentration ( $\mu\text{g/g}$ )	Inventory (kg)
Aluminum	2.61E+05	3.63E+03
TIC (as $\text{CO}_3$ )	2.28E+04	3.18E+02

# Tank C-103 Residual Waste



# C-200 Tanks Residual Waste

- About 150 gal waste remaining in each of the four tanks (C-201, C-202, C-203, and C-204)
- Dark brown/black solids and yellow solids can be seen on the tank bottom
- Post-retrieval samples described as
  - Dry dark brown crumbly or chunky solids
  - Sticky, moist yellow-brown solids

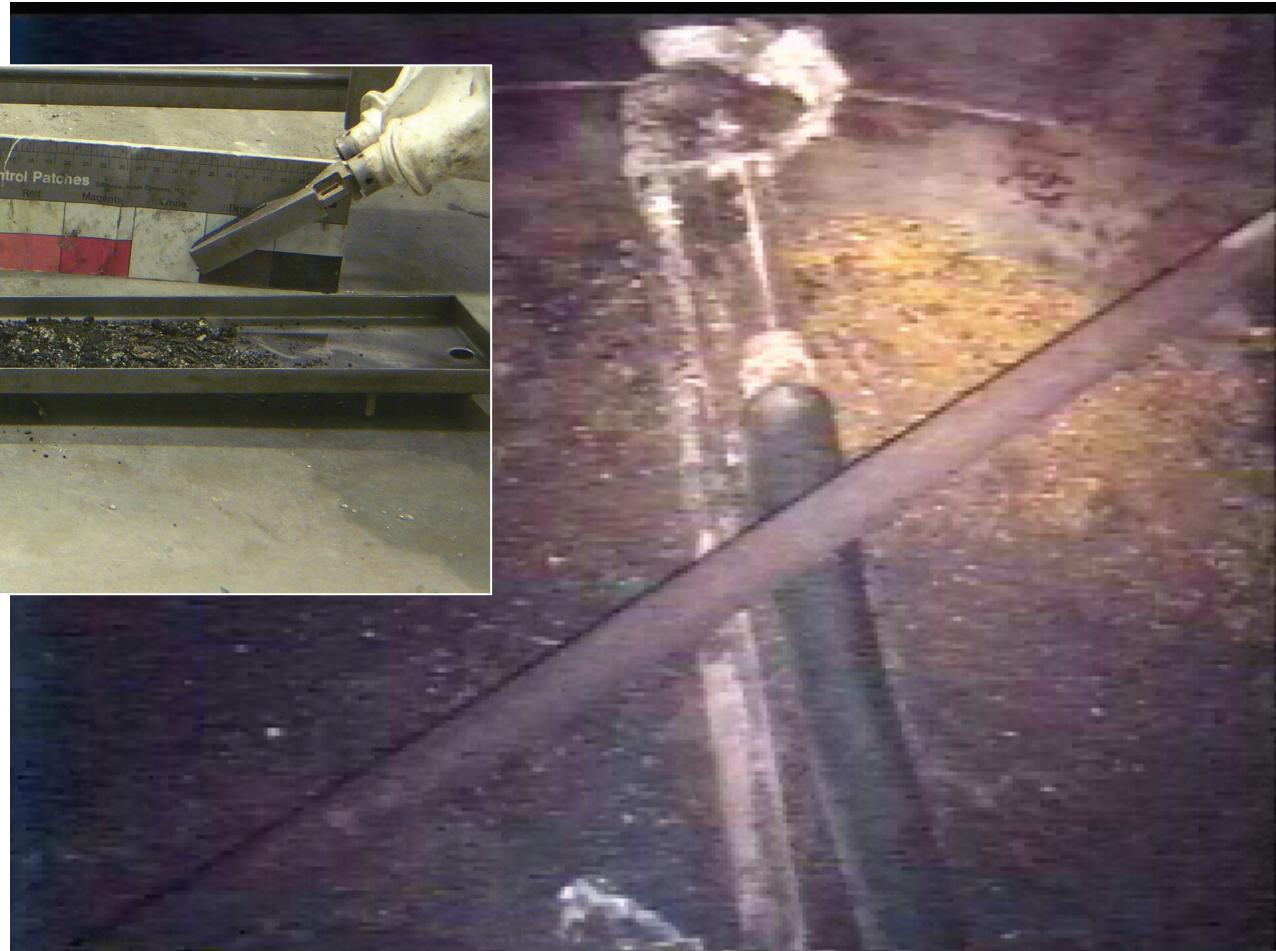
# C-200 Tanks Residual Waste Constituents > 1 wt%

Constituent	Tank C-201 Concentration ( $\mu\text{g/g}$ )	Tank C-202 Concentration ( $\mu\text{g/g}$ )	Tank C-203 Concentration ( $\mu\text{g/g}$ )	Tank C-204 Concentration ( $\mu\text{g/g}$ )
U (total)	1.18E+05	1.03E+05	3.55E+05	2.71E+05
Fe	1.17E+05	9.08E+04	1.40E+04	3.58E+04
PO <sub>4</sub>	5.81E+04	3.61E+04	7.88E+04	8.87E+04
Na	5.23E+04	4.78E+04	6.08E+04	3.71E+07
TOC	3.8E+04	3.68E+04		3.95E+04
TIC (as CO <sub>3</sub> )	8.92E+04	7.79E+04		
Oxalate	5.42E+04	3.92E+04		
Mn	2.02E+04	1.76E+04		
Cr	1.29E+04			

# C-200 Tanks Residual Waste Constituents > 1 wt%

Constituent	Tank C-201 Inventory (kg)	Tank C-202 Inventory (kg)	Tank C-203 Inventory (kg)	Tank C-204 Inventory (kg)
U (total)	1.11E+02	9.88E+01	3.26E+02	2.43E+02
Fe	1.10E+02	8.70E+01	1.28E+01	3.21E+01
PO <sub>4</sub>	5.46E+01	3.46E+01	7.24E+01	7.96E+01
Na	4.91E+01	4.58E+01	5.59E+01	3.33E+01
TOC	3.46E+01	3.53E+01		3.54E+01
TIC (as CO <sub>3</sub> )	8.38E+01	7.47E+01		
Oxalate	5.10E+01	3.76E+01		
Mn	1.90E+01	1.69E+01		
Cr	1.22E+01			

# Tank C-201 Residual Waste



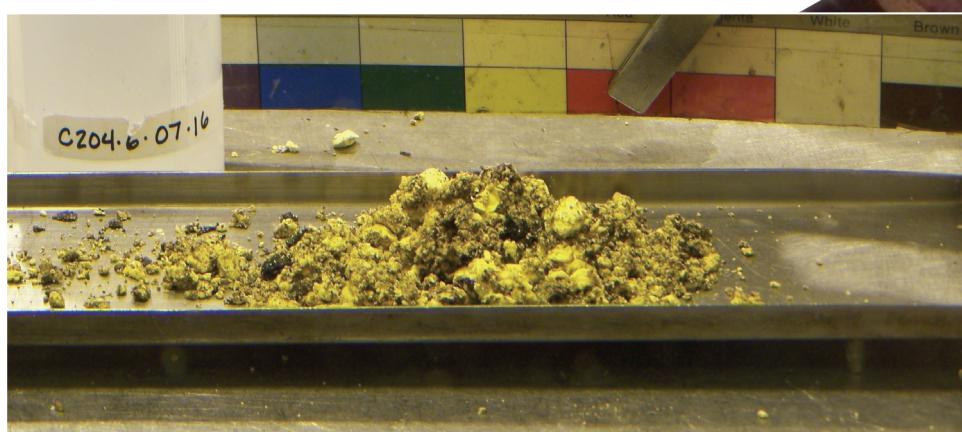
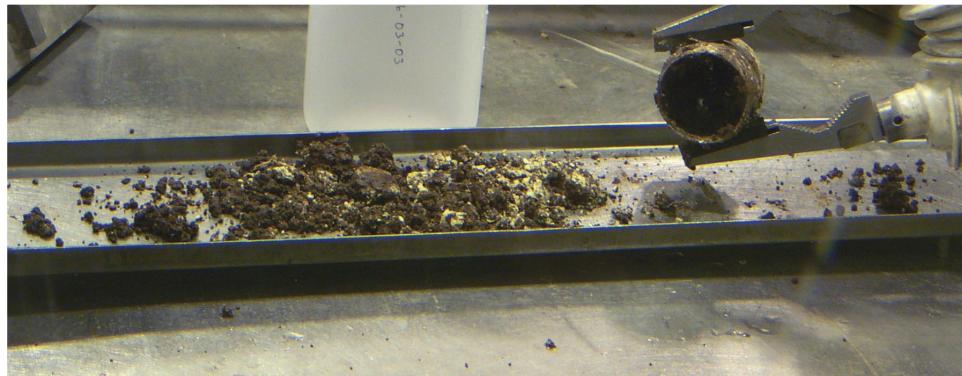
# Tank C-202 Residual Waste



# Tank C-203 Residual Waste



# Tank C-204 Residual Waste



# **S-112 Tank Residual Waste**

- About 2400 gallons of waste residue remain in S-112 (300 gallons liquid).
- Appear light yellow brown in video mostly fine sand and mud like.
- Laboratory samples are light gray with a few black flakes. 100 – 200 microns.

# **Tank S-112 Residual Waste Constituents > 1 wt% in Solids**

<b>Constituent</b>	<b>Mass (kg)</b>	<b>percentage</b>
Aluminum	3870.0	80.5%
Sodium	786.0	16.3%
Total	4807.5	96.8%

# S-112 Today



# **Heels and Pebbles**

- We have completed retrieval of 7 tanks. All have had large particulate material which could not be easily retrieved.
- If we want to get to the next step in reducing residuals we need to deal with larger solids.
- Aluminum dissolution in caustic may be a way of going to the next step.

# Questions?

## Contact Information

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